REMARKS

Claims 1, 2, 4, and 8-14 are pending in the application. Claim 1 has been amended to include the limitations of dependent Claim 3, thus no new matter has been added; support can be found in paragraph [0041]. Claims 3 and 43 have been cancelled. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendment and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103 – WILSON ET AL. IN VIEW OF R.B. MOORE ET AL. AND WILSON

Referring to the Office Action mailed February 1, 2006, Claim 3 (which is now currently amended Claim 1) stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilson et al. "Thin-film catalyst layers for polymer electrolyte fuel cell electrodes," J. of Applied Electrochemistry, 22 (1992) (hereinafter Wilson) in view of R. B. Moore et al. "Procedure for Preparing Solution-Cast Perfluorosulfonate Ionomer Film and Membranes" 58 Anal. Chem. 2569-70 (1986) (hereinafter Moore) and Wilson (U.S. Pat. No. 5,234,777) (hereinafter Wilson '777). This rejection is respectfully traversed as the combination of these references fails to establish a *prima facie* case of obviousness.

In Claim 1, the slurry is applied to a non-porous polymeric substrate that is from about 12-250 µm thick and has sufficient structural integrity to facilitate reuse. The high boiling point solvent is removed to form a film on the substrate, whereupon the film is bonded to a membrane and the substrate is separated from the membrane so that the substrate can be reused.

The Office Action has failed to assert at least two requisite conditions for a *prima facie* case of obviousness. First, the prior art references do not teach or suggest all the claim limitations. Second, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings to arrive at Applicant's invention. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

First, the combination of Wilson, Moore, and Wilson '777 does not disclose a reusable non-porous polymeric substrate, which can be made of Teflon®, having a thickness of from about 12 to about 250 µm and having sufficient structural integrity to facilitate reuse. In fact, several features of the present invention's substrate are lacking in the combination of the aforementioned references.

Perhaps foremost, the combination of references fails to disclose any thickness for the substrate. The Office Action from 2/1/06 partially admits as much: "Wilson in view of Moore and Wilson '777 does not discuss in detail the thickness of the Teflon blank." Office Action 2/1/06 page 4, section 5. However, Wilson does not discuss the thickness of the Teflon blank *at all* – there are no details, no discussion, no mention, nor inference regarding the thickness of the Teflon blank. Contrary to the Office Action's statement that "Wilson does suggest that thickness of the material is important to an artisan in order to achieve a desired end", there is no such express or implied acknowledgement or suggestion in Wilson.

Applicants note that the Office Action provides no citation or reference for a passage in Wilson that expressly or impliedly teaches the importance of substrate thickness. Applicants can only surmise that the Office Action is referring to the citation of Figure 1 and protocol step 4 on page 3 of Wilson, which was cited in the Office Action on page 3, section 3, for the proposition that the Wilson blank has sufficient structural integrity to be reusable. But, Figure 1 and protocol step 4 say nothing as to the thickness of the blank, or either to the re-usability of the blank for that matter, and the whole of the Wilson reference only ever contemplates thickness in terms of the catalyst film layer (formed by the ink coated onto the Teflon® blank). See Wilson, page 1, col. 2, 1st full paragraph; page 2, col. 2, 2nd full paragraph; page 4, Fig. 4; and page 5, col. 1, Discussion section. For example, the blanks in Wilson could just as easily have been designed for a single use and made as thin as possible to avoid waste and material costs, as opposed to reusing them.

The Office Action also states that it would have been obvious to use a substrate having a thickness in the range of claim 3 (now claim 1), because Wilson teaches the importance of thickness and as such, the Examiner is taking official notice that the claimed range is within the purview of one of ordinary skill in the art based on experimentation and the ultimate design desired by the artisan. However, there is no disclosure in Wilson that supports reuse of the blank/substrate; and without the appreciation of reusing the substrate there is no reason to optimize the thickness. Hence the reuse of the blank/substrate is not common knowledge and official notice cannot be taken thereof, nor can subsequent optimization of thickness be appropriate without the suggestion of reusing the blank in the prior art. The only suggestion or disclosure as to reuse of a substrate is from Applicants' invention, and Applicants' invention cannot be used in hindsight to suggest a prior art reference teaches reuse of a blank with consequent optimization of blank thickness. Applicant respectfully requests the Examiner to identify where in the Wilson reference it is suggested that the Teflon® blank is reusable.

Likewise, the combination of Wilson, Moore, and Wilson '777 does not disclose use of a non-porous substrate, whereas the present invention describes the use and benefits of a non-porous polymeric substrate. See paragraph [0062]; and see comparison of a decal made with a porous substrate versus a non-porous substrate in Figure 8. A Teflon® blank is not inherently porous or non-porous; these are specific characteristics which can be imparted to the material during or after its manufacture. For example, the commonly known membrane Gore-Tex® (W.L. Gore & Associates) is composed of a thin, porous polytetrafluoroethylene (i.e., Teflon®) membrane that has about 9 billion pores per square inch, which is a very different material than a non-porous substrate. See attachement accompanying this amendment, taken from FAQs regarding Gore-Tex® fabric at www.gore-tex.com; direct link: http://www.gore-tex.com/webapp/wcs/stores/servlet/ContentGView?storeId=10001&catalogId=10001&langId=-1&productId=10357. Consequently, since there is no disclosure in these references of the species of non-porous substrates, including non-porous polytetrafluoroethylene, the present invention cannot be obvious.

It should also be noted that the blank of Teflon® film in Wilson is sprayed with a mold release prior to painting with a layer of the catalyst ink. See Wilson page 3, step 4. If anything, this implies that release of the catalyst layer from the blank is problematic in the Wilson reference, thus the film very well might be porous. In contradistinction, the present invention uses a non-porous polymeric substrate that does not require application of a mold release. See the comparative example in paragraph [0061] and Figure 9.

Furthermore, there is no express or implied limitation that the blank of Teflon® film in Wilson can be reused or that it has sufficient structural integrity to be reused. Teflon® is not inherently reusable; when the blank is peeled away from the membrane in Wilson (page 3, protocol step 6) there is nothing to suggest it is reused. It could be stretched or torn. Wilson does not disclose anything as to the blank having sufficient structural integrity so that it can be reused. However, in the present invention the beneficial elastic properties and described character of the non-porous polymeric material facilitate reuse and such substrate properties are described in detail in paragraphs [0040] and [0041].

Contrary to the assertion in the Advisory Action that "since the material used as the substrate in Wilson is the same applicant uses, it is inherently reusable," the comments in the preceding sections have shown specific characteristics of the present invention's substrate that are absent from the combination of references, in particular, the blank used in Wilson.

Teflon® is not inherently reusable for a given application, just as it does not inherently have the porosity of 9 billion pores per square inch that is found in Gore-Tex®, or the stretch and tear properties of Teflon® pipe thread tape. See DuPont's website (www.teflon.com) for a plethora of Teflon® articles with varying and specific characteristics.

In contrast, the blank of the present claims is expressly nonporous. Thus, contrary to the Advisory Action's statement that "there is nothing in the claims which distinguishes applicant's substrate from the one used in Wilson," the limitations discussed above clearly indicate that the substrate, whether it be ethylene tetrafluoroethylene, polyimide, polytetrafluoroethylene, or polyphenylsulfone, must be non-porous, have a particular thickness, and have sufficient structural integrity to facilitate reuse.

To summarize, there are several elements of the substrate of the present invention, including thickness, porosity, and reusability, that are missing from the combination of references. As a result the present invention is not obvious in view of these references.

REJECTION UNDER 35 U.S.C. § 103 – WILSON ET AL. IN VIEW OF R.B. MOORE ET AL. AND WILSON, AND FURTHER IN VIEW OF ARTYSIEWICZ

Referring to the Office Action mailed February 1, 2006, Claim 3 (which is now currently amended Claim 1) stands rejected over Wilson in view of Moore and Wilson '777, and further in view of Artysiewicz et al. (U.S. Pat. No. 6,180,163) (hereinafter Artysiewicz). This rejection is respectfully traversed as the combination of these references fails to establish a prima facie case of obviousness.

Wilson, Moore, and Wilson '777 are relied on by the Office Action as discussed above, and Artysiewicz generally discloses methods of making a membrane electrode assembly. An exemplary embodiment in Artysiewicz is disclosed at col. 15, line 52 et seq. wherein a 5 mil-thick unhydrolyzed membrane (i.e., the membrane in a membrane electrode assembly, or MEA) is screen printed on both sides with a coating formulation of catalyst, thereby forming the MEA. The MEA is sandwiched between two pieces of a fluoropolymer film (e.g., Teflon®) and heat pressed. The MEA is then removed from the sandwich, indicating the Teflon® films are removed.

The 5 mil-thick unhydrolyzed membrane in Artysiewicz corresponds to the polymer electrolyte membrane of Wilson; it is *not* the blank of Teflon® film in Wilson. The two pieces of a fluoropolymer film (Teflon®) in Artysiewicz correspond to the blanks of Teflon® film in Wilson. The two references are assembling MEA's in different ways. In Artysiewicz, the membrane is screen printed on both sides with catalyst, and the three layers are pressed between two pieces of a fluoropolymer film. By contrast, Wilson is painting a blank with catalyst and then hot-pressing the catalyst film to the polymer electrolyte membrane and a counter electrode and peeling away the blank, leaving the catalyst thin film adhered to the membrane. The MEA end product in both references is similar, but it is clear that the 5 mil-thick unhydrolyzed membrane in Artysiewicz is *not* the blank of Teflon® film in Wilson or the substrate of the present invention. Accordingly, Artysiewicz does not demonstrate a substrate having the claimed thickness of the present invention. And the Artysiewicz reference does not disclose any thickness for the two pieces of fluoropolymer film used in the hot-pressing, which are the closest analogous elements to the blank of Teflon® film from Wilson and the non-porous substrate of the present invention. Therefore, since the thickness of the present invention's substrate is not disclosed in the combination of references, and there is no suggestion or motivation for reusing a non-porous polymeric substrate having a thickness about 12-250 μm and sufficient structural integrity to facilitate reuse, the present invention is not obvious.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: May 1, 2006

By: Anna M Budde
Anna M. Budde, Reg. No. 35,085

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600

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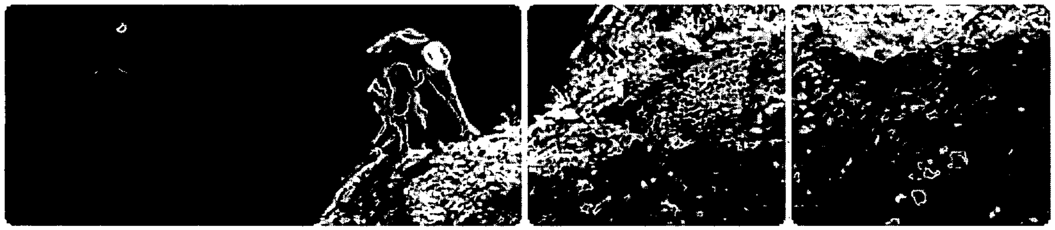

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Glossary

Technical outerwear comes with its own technical vocabulary. You don't need to be an expert to appreciate the world-class comfort and protection offered by our fabrics, but understanding how we define their properties and characteristics can help you make an informed choice.

breathability
The rate at which water vapor molecules move through a clothing layer. This movement is determined by the difference in concentration of water vapor (or humidity) between the surface of the skin and the air outside the garment, as well as the physical resistance of the fabric layers. The humidity difference is determined by your activity level, which drives sweating, and the climate around you. The fabric resistance is a property of the materials used in the garment and their thickness. Thicker layers offer more resistance and breathe less.

DWR
An ultra-thin treatment of *durable water repellent* polymer applied to the outermost fabric layer of Gore laminates. This coating penetrates the fibers and lowers the surface tension of the fabric, causing water to bead up and roll off the garment instead of being absorbed. DWR is not a waterproofing treatment by itself; the GORE-TEX® membrane does that. DWR significantly improves your comfort in the rain by reducing the heat

loss through wet fabric.

ePTFE
Expanded polytetrafluoroethylene, the hydrophobic, or water-hating, material in the GORE-TEX® membrane.

GORE-TEX® fabric
The most durably waterproof, very breathable, totally windproof fabric meeting Gore's Guaranteed to Keep You Dry® standards. Created when the GORE-TEX® membrane is bonded to high-performance textiles to create laminated fabrics. Different GORE-TEX® laminates satisfy the requirements of different types of garments.

GORE-TEX® membrane
GORE-TEX® products are based on GORE-TEX® ePTFE membrane technology. The membrane provides a thin, uniform barrier that can provide properties like waterproofness or chemical resistance. A single square inch of the GORE-TEX® membrane contains 9 billion microscopic pores — each 20,000 times smaller than a raindrop but 700 times larger than a molecule of water vapor — so while water can't pass through the fabric, perspiration can. Integrated into the ePTFE structure is an oleophobic, or oil-hating, substance that allows moisture vapor to pass through but is a physical barrier that prevents the penetration of contaminating substances such as oils, cosmetics, insect repellents, and food substances.

laminate
A 'sandwich' created by bonding ePTFE membrane to different fabrics. A 2-layer laminate is made by bonding a shell fabric to the membrane for use on the outside of a garment; a 3-layer laminate is made by bonding a shell fabric to the outside of the membrane and a knit to the inside.

microclimate
The very thin layer of warm air that exists next to the body's skin. People are most comfortable with a tropical microclimate of 90°F to 95° F and 40% to 60% humidity.

shell
The outer fabric layer of a garment, or the outermost layer in a layered clothing system.

waterproof fabric
A truly waterproof fabric must be able to withstand water entry pressure resulting from active use in extended wet weather, including activities like walking in wind-driven rain or kneeling or sitting on a wet surface.

water repellent fabric
Not to be confused with 'waterproof.' A water-repellent fabric uses a DWR coating or a dense weave to prevent saturation of a garment's shell layer. Water repellent fabrics shed or repel water; however, they are not waterproof.

wet out
A condition that occurs when the exterior fabric of a waterproof garment becomes saturated with water, thereby increasing its ability to transmit heat from the body and creating clamminess or a cooling sensation often confused with water entry or garment leakage.

windchill factor
A measurement of the cooling effect of moving air and wind on the body. Often expressed as an equivalent temperature in still air that would create the same heat-loss effect.

windproof fabric
Having an air permeability of 1 cfm (cubic feet per minute) or less in a 30 mph wind. A truly windproof garment will prevent heat loss from convection.

WINDSTOPPER® fabric
A durably windproof, very breathable fabric consisting of the WINDSTOPPER® membrane laminated into 2- and 3-layer fabric constructions.

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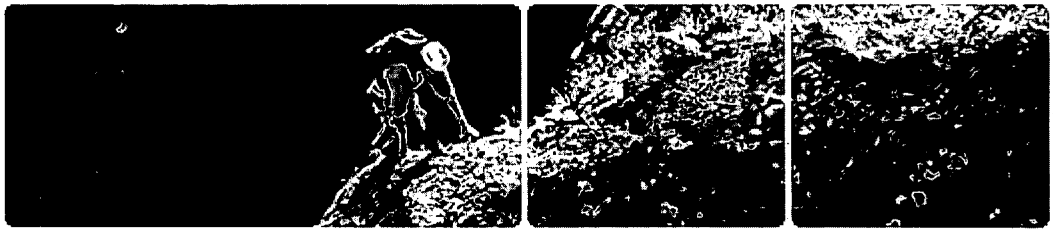

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How does the GORE-TEX® membrane work?

The GORE-TEX® membrane has 9 billion pores per square inch, with each pore 20,000 times smaller than a water droplet. These tiny holes are too small for water and wind to pass through from the outside, which is how we can guarantee you'll stay dry and warm in a garment made with GORE-TEX® fabric. But these same pores are large enough for moisture vapor to pass through, so your body's perspiration is able to escape and you don't get clammy and uncomfortable. That's what 'waterproof/breathable' is all about.

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